

Causes and Accompanying Factors of Diarrhea Among Under Fives from the Mothers' Point of View

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ABSTRACT

Objective: To examine the frequency, determinants, and healthcare-seeking patterns associated with diarrhea in children aged below five years.

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted at the Nursing Engineering Department, Alfarabi University College, Iraq, Baghdad from 1st January 2024 to 30th June 2024.

Methods: One hundred demographically-matched children were enrolled and specifically emphasized the impact of breastfeeding, artificial feeding, and mixed feeding practices on the occurrence of diarrhea. The data were obtained via the administration of questionnaires, laboratory analysis of stool cultures, general laboratory examination of stool samples, and review of patient charts.

Results: The significant contributions to understanding of the complex characteristics of diarrhea among susceptible demographics.

Conclusion: The significance of implementing focused interventions aimed at alleviating the impact of diarrhea, particularly through the implementation of targeted strategies related to feeding practices.

Key Words: Diarrhea, Children, Mothers, Breastfeeding, Artificial feeding, Mixed feeding, Prevalence, Contributing factors, Care-seeking behavior

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INTRODUCTION

Diarrhea is a common gastrointestinal illness affecting a significant number of children worldwide, particularly those under five years of age. This research is critically significant from an academic perspective, as it addresses the pressing issue of children's diarrhea, yielding essential findings that are vital for enhancing the effectiveness of targeted interventions and maternal education, facilitating timely healthcare access, thereby preventing child mortality and improving overall well-being. The specified condition significantly contributes to morbidity and mortality, with an estimated yearly death toll around 1.6 million individuals.¹ Diarrhea is particularly prevalent in low- and middle-income countries, where access to clean water, proper sanitation, and healthcare services is limited.

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Understanding the case and related factors of diarrhea in children under five, as reported by mothers, is crucial for developing targeted interventions to effectively reduce the incidence and impact of this condition. Mothers play a vital role in protecting the health and well-being of their children, including the prevention and control of diarrhea. The incidence of diarrhea in young children is greatly affected by feeding techniques, specifically breastfeeding, formula feeding, and combination feeding. Breastfeeding is essential for providing critical nutrients and immunological factors that protect against diarrheal illnesses. Conversely, it is crucial to recognize that inappropriate artificial feeding techniques and a mixed feeding approach, which integrates breast milk with other feeding methods, may increase the risk of contamination and nutrient imbalances.² Understanding the relationship between eating patterns and diarrhea incidence is essential for developing effective therapies.

Diarrhea in children under five is complex. Poor hand washing, food handling, and water sources contribute to diarrhea. Pathogens in contaminated food and water, particularly improper water treatment and storage, can cause diarrhea in children. Suboptimal breastfeeding, artificial feeding, and mixed feeding increase diarrhea risk. Lack of preventative knowledge and healthcare-seeking habits delay treatment and worsen outcomes.³ The academic community considers breastfeeding the best way to feed infants due to its many benefits, including diarrhea prevention. Numerous studies have

shown that breast milk contains nutrients, antibodies, and other bioactive constituents that boost the infant's immune system and protect against gastrointestinal infections. Breastfed infants have a lower diarrhea rate than those who don't, according to numerous studies. Breast milk contains secretory IgA antibodies, lactoferrin, oligosaccharides, and diverse immune cells that prevent diarrhea. Breastfeeding also promotes a diverse and beneficial gut microbiota, reducing diarrhea.⁴

Infant formula replaces breastfeeding, but it increases diarrhea risk due to lack of antibodies, immune factors, and contamination. Breastfeeding is recommended for optimal protection.⁵

Mixed feeding, combining breastfeeding and formula, may increase diarrhea risk, but maintaining hygiene and proper training can prevent it, according to mixed research.^{6,7}

Infant diarrhea, caused by viruses, bacteria, parasites, contaminated water, poor hygiene, dietary factors, medication side effects, and medical pathologies, requires understanding and addressing feeding-related variables for effective management.⁸ Breastfeeding protects infants from diarrhea, while artificial feeding increases risk. Hygiene, formula preparation, and infant monitoring are essential for reducing diarrhea rates.⁹

METHODS

The present study utilized a cross-sectional research design to gather data pertaining to instances of diarrhea in children aged below five years. The research was carried out in partnership with healthcare institutions and local communities within a specific geographic area. The utilization of a cross-sectional design facilitated the acquisition of data at a particular moment, thereby capturing a momentary representation of the occurrence, underlying factors, and healthcare-seeking patterns associated with diarrhea in the cohort of children under investigation. Researchers conducted structured questionnaires on mothers of diarrheal children, covering demographics, feeding practices, hygiene, prevention, and healthcare seeking behaviors, aiming to collect extensive data on diarrhea-related factors. The study used stool culture analysis to identify diarrhea-causing bacteria and parasites in children, aiding in the identification of infection sources. Laboratory analysis of stool samples revealed diarrhea intensity and characteristics through examination of consistency, color, blood, mucus, and other abnormalities. The analysis of patient charts revealed mothers' healthcare-seeking behaviors, including timing, treatment, and medication adherence, significantly influence medical care utilization and treatment adherence trends. The researchers used descriptive statistics to analyze questionnaire quantitative data. This analysis sought to determine diarrhea prevalence and its causes, particularly feeding

practices. The stool culture laboratory examination and general stool culture laboratory examination were analyzed to determine pathogens, diarrhea intensity, and anomalies. The qualitative data from questionnaires and patient charts was thematically analyzed to identify feeding, hygiene, and healthcare-seeking themes.

RESULTS

The study reveals significant differences in diarrhea prevalence among children under five, attributed to poor hygiene, contaminated food, inadequate sanitation, and suboptimal feeding practices. Diarrhea in young children is influenced by lack of prevention and healthcare knowledge, with high rates across demographics and locations, highlighting the importance of exclusive breastfeeding and hygiene. The study reveals demographic trends, with 94% of participants aged 18-36, 77% uneducated, and having 2-3 children per mother. The gender distribution of offspring is also significant (Table 1).

It has been reveals disparities in vaccination rates across vaccine types and doses, with Rota viral vaccines showing slightly lower rates, and coverage varying by vaccine (Table 2). 89% of participants practice personal hygiene and health child care practices, with 87% following hand hygiene and 12% not, suggesting some areas need improvement (Table-3). 55% of participants follow structured breastfeeding and feeding schedules, 82% wash and sterilize feeding bottles, and 86% follow vaccinations. However, symptom identification and management could be improved (Table 4). 50% of participants recognized symptoms like coma, abdominal pain, vomiting, fever, decreased appetite, and skin elasticity, emphasizing the need for education on potential illnesses (Table 5). 21% of participants prefer breastfeeding, while 33% use infant formula, and 46% mix feeding, emphasizing the need for exclusive breastfeeding as the best option (Fig.1).

Table No. 1: Demographical characteristics of the children (n=100)

Item	Response	%
Mother's age	18 to 36	94.0
The mother's educational level	Uneducated	70.0
Number of children	2 to 4	100.0
Age of the child	3 to 4	100 %
Child's gender	Male	62 %
Child's gender	Female	48 %

Hence, unvaccinated children are more susceptible to vaccine-preventable diseases. Inadequate nutrition or food intake can cause health problems and immune dysfunction. These risk factors emphasize the importance of proper hygiene, clean water, waste management, nutrition, and medical care for children's health. E. coli dominates 18% of samples, Klebsiella

and *Candida albicans* have 12% and 14% representation, and *Enterobacter*, *Pseudomonas aeruginosa*, and *Proteus* are 8-10% (Table 6).

Table No. 2: Immunization coverage among under fives

Item	Vaccinated	Unvaccinated
B vaccine (hepatitis B virus type)	32%	68%
BCG	33%	67%
Zero dose polio vaccine	61%	59%
Polio vaccine first dose	56%	54%
Polio vaccine first dose 2	61%	59%
Polio vaccine first dose 4	61%	59%
Rota viral vaccine	54%	56%
Rota viral vaccine 3	46%	54%
Rota viral vaccine 5	49%	51%
Pentavalent vaccine (B, diphtheria, tetanus, pertussis)	42%	58%
Measles	79%	21%
Vitamin A 100,000 IU	51%	49%
Mumps, measles, Rubella	74%	26%
Polio vaccine	74%	26%
Quadruple vaccine (B, diphtheria, tetanus, pertussis)	74%	26%
Vitamin A 200,000 IU	74%	26%
The triple vaccine (diphtheria, tetanus, pertussis)	66%	44%

Table No. 3: Environmental factors

Query	Yes	No
Taking care of the child's personal hygiene	42%	58%
Daily shower	11%	89%
Change clothes daily	74%	26%
Monitor the growth and development of the child	41%	59%
Seek medical advice	62%	38%
Adhere to the hand washing technique	13%	87%
Caring for the cleanliness of the surroundings and the environment: preventing pollutants and maintaining environmental sanitation	73%	27%
Proper disposal of waste	77%	23%
Insect control	88%	12%
Avoid using the child's needs and toys by others	27%	73%
Use clean, potable water	60%	40%
Maintaining food hygiene	74%	26%

Table No. 4: Mothers-practices toward child diarrhea

Query	Yes	No
Follow organized times for breastfeeding and feeding the child	55%	45%
Follow the washing and sterilization (boiling) in the preparation of feeding bottles	11%	89%
Ensure that the child is immunized by covering the vaccination schedule	14%	86%
When a child has diarrhea, the mother notices the following: Loss of appetite	51%	49%
Stop eating	66%	34%
Elevated body temperature (fever)	70%	30%
Drought	43%	57%
Baby weight loss	80%	20%
Lethargy and weak movement	87%	13%
Maintain fluids by compensating the child's body with them	20%	80%
Use of oral rehydration solution at home	16%	84%
Giving the child intravenous fluids	14%	86%
Determine the age of the child when supplementary feeding is added besides milk	40%	60%

Table No. 5: Symptoms of diarrhea

Query	%
Continuous coma	50.0
Abdominal pain	44.0
Vomiting	63.0
Fever	40.0
Loss of appetite	67.0
Loss of skin elastic	50.0
Loss of skin turgor and dry lab	45.0
Unconsciousness	39.0
Unable to drink and feeding	42.0
Continuous crying	55.0

Table No. 6: The costive agent of diarrhea according to stool culture examination (n=100)

Stool culture examination	No.	%
<i>E. coli</i>	18	18.0
<i>Klebsiella</i> species	12	12.0
<i>Canida albicans</i>	14	14.0
<i>Enterobacter</i> species	8	8.0
<i>Pseudomonas aeruginosa</i>	7	7.0
<i>Proteus</i> species	10	10.0
<i>Shigella</i>	5	5.0
Normal flora	15	15.0
<i>E. histolytica</i>	6	6.0
<i>Monillia</i>	5	5.0

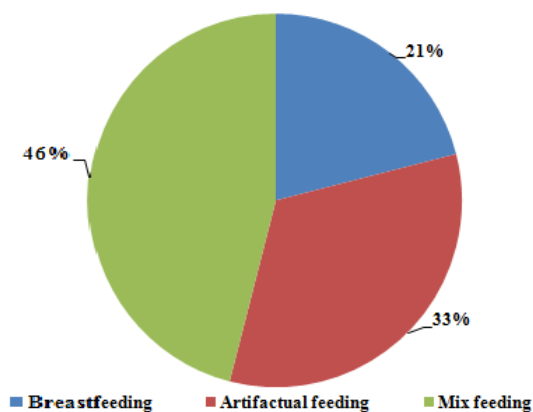


Figure No. 1: Feeding type

DISCUSSION

Regular vaccination prevents infectious diseases. The procedure boosts immunity by activating the immune system to recognize and fight pathogens.¹⁰ To reduce illness and severity, public health relies on vaccination. Rotavirus vaccination is crucial for kids. Infants and young children are susceptible to rotavirus, which causes diarrhea, vomiting, and dehydration. Children's rotavirus vaccines prevent illness.¹¹ This oral rotavirus preventing works well. Children's immunizations should include the rotavirus vaccine to reduce infections and improve global child health.¹² Hygiene practices, such as frequent hand washing and sanitation reduce pathogen transmission and infection risk. Environmental factors, such as uncontaminated water, waste management, and ventilation, also impact health.¹³ Implementing effective hygiene protocols and creating a healthy environment can reduce infections, improve welfare, and improve living conditions.¹⁴

Mothers' practices towards child diarrhea significantly impact management and outcomes. Effective hygiene measures, fluid intake, proper feeding, and seeking medical advice are crucial for improving the child's condition and recovery.¹⁵

Diarrhea in children presents with symptoms like watery stools, abdominal pain, cramps, nausea, vomiting, decreased appetite, dehydration, fever, and body aches. Regular monitoring and prompt medical intervention can prevent complications.¹⁶

The term "feeding practices for children under 5 years" refers to the methods used to provide adequate nutrition during this crucial developmental period. Children in this age group are fed by breastfeeding and complementary feeding. Breastfeeding infants exclusively until 6 months provide the best nutrition, providing vital nutrients and antibodies for development and immunity.¹⁸

Complementary feeding involves adding solid foods to breast milk or formula at 6 months to meet the child's nutritional needs.¹ Providing a variety of nutritionally dense age-appropriate fruits, vegetables, grains, protein

sources, and healthy fats is crucial. The child should be encouraged to eat according to their hunger and fullness signals through responsive feeding. Suitable feeding practices during this period promote healthy eating habits and optimal growth and development.¹⁷

During a general stool examination, children's diarrhea can reveal important information, such as color, odor, consistency, pH, occult blood, ova and parasites, and pus.¹⁸ Diarrhea frequency in children can indicate medical or infectious conditions.¹⁹ Lab analysis of fecal matter can identify bacteria, viral infections, parasites, and fungal pathogens. Diarrhea in children requires medical attention, including fluid intake, diet changes, and pharmaceutical treatments.²⁰ Hospitalization allows for improved surveillance, intravenous fluid rehydration, and additional diagnostic tests.

Child health issues can be influenced by various risk factors, including bottle feeding formula, poor garbage management, dirty water, and improper food storage or undercooked food.^{21,22}

Seasonal changes, poor house sanitation, and poor hand washing can increase the risk of diseases, as they spread germs and cause illness.²³

Poor mother hygiene during child care increases infection risk, and improper medication or fluid intake during diarrheal episodes can worsen the condition.²⁴

Crowding in densely populated areas can spread infectious diseases, cause dehydration and complications in children, and lead to malnutrition and stunted growth due to poor diets.^{25,26}

Poor hygiene habits in children, particularly in crowded, poorly ventilated areas, can increase infection risk, leading to the development of antibiotic-resistant infections.²⁷

Oral rehydration solution is crucial for diarrhea, but pacifier use can increase infection risk, children can spread infections, poor hygiene can cause UTIs, and folk remedies without medical supervision may be ineffective or harmful.

The researchers recommend increasing health education for mothers to increase their knowledge and practices for diarrhea in children, instilling the importance of coverage size immunization schedule, breastfeeding and general hygiene and seeking medical advice at the right time over using folk remedies.

CONCLUSION

Laboratory tests showed possible causes. E. coli was found in 18% of samples and Klebsiella species in 14%. This discourse concerns the mother's understanding and her misguided approaches to treating a child with diarrhea, as well as her delay in seeking professional medical advice, instead using traditional remedies.

Author's Contribution:

Concept & Design or acquisition of analysis or	Ilham Amin Jaddoue
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interpretation of data:	
Drafting or Revising Critically:	Ilham Amin Jaddoue
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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